

transpired during camp should be discussed with the family when the camper is picked up.

A formal relationship with a nearby medical facility should be secured for each camp so that camp medical staff have the ability to refer to this facility for prompt treatment of medical emergencies. It is imperative that the medical staff is led by someone with expertise in managing type 1 and type 2 diabetes. Nursing staff should include diabetes educators and diabetes clinical nurse specialists. Registered dietitians with expertise in diabetes should also have input into the design of the menu and the education program. All camp staff, including medical, nursing, nutrition, and volunteer, should undergo background testing to ensure appropriateness in working with children.

D. Diabetes management in correctional institutions (232)

Recommendations

- Patients with a diagnosis of diabetes should have a complete medical history and undergo an intake physical examination by a licensed health professional in a timely manner. (E)
- Insulin-treated patients should have a capillary blood glucose (CBG) determination within 1–2 h of arrival. (E)
- Medications and MNT should be continued without interruption upon entry into the correctional environment. (E)
- Correctional staff should be trained in the recognition, treatment, and appropriate referral for hypo- and hyperglycemia. (E)
- Train staff to recognize symptoms and signs of serious metabolic decompensation and to immediately refer the patient for appropriate medical care. (E)
- Institutions should implement a policy requiring staff to notify a physician of all CBG results outside of a specified range, as determined by the treating physician. (E)
- Identify patients with type 1 diabetes who are at high risk for DKA. (E)
- In the correctional setting, policies and procedures need to be developed and implemented to enable CBG monitoring to occur at the frequency necessitated by the individual patient's glycemic control and diabetes regimen. (E)
- Include diabetes in correctional staff education programs. (E)
- For all interinstitutional transfers, complete a medical transfer summary to be transferred with the patient. (E)
- Diabetes supplies and medication should accompany the patient during transfer. (E)
- Begin discharge planning with adequate lead time to insure continuity of care and facilitate entry into community diabetes care. (E)

At any given time, >2 million people are incarcerated in prisons and jails in the U.S. It is estimated that nearly 80,000 of these inmates have diabetes. In addition, many more people with diabetes pass through the corrections system in a given year.

People with diabetes in correctional facilities should receive care that meets national standards. Correctional institutions have unique circumstances that need to be considered so that all standards of care may be achieved. Correctional institutions should have written policies and procedures for the

management of diabetes and for training of medical and correctional staff in diabetes care practices.

Reception screening should emphasize patient safety. In particular, rapid identification of all insulin-treated individuals with diabetes is essential in order to identify those at highest risk for hypo- and hyperglycemia and DKA. All insulin-treated patients should have a CBG determination within 1–2 h of arrival. Patients with a diagnosis of diabetes should have a complete medical history and physical examination by a licensed health care provider with prescriptive authority in a timely manner. It is essential that medication and MNT be continued without interruption upon entry into the correctional system, as a hiatus in either medication or appropriate nutrition may lead to either severe hypo- or hyperglycemia.

All patients must have access to prompt treatment of hypo- and hyperglycemia. Correctional staff should be trained in the recognition and treatment of hypo- and hyperglycemia, and appropriate staff should be trained to administer glucagon. Institutions should implement a policy requiring staff to notify a physician of all CBG results outside of a specified range, as determined by the treating physician.

Correctional institutions should have systems in place to ensure that insulin administration and meals are coordinated to prevent hypo- and hyperglycemia, taking into consideration the transport of residents off site and the possibility of emergency schedule changes.

Monitoring of CBG is a strategy that allows caregivers and people with diabetes to evaluate diabetes management regimens. The frequency of monitoring will vary by patients' glycemic control and diabetes regimens. Policies and procedures should be implemented to ensure that the health care staff has adequate knowledge and skills to direct the management and education of individuals with diabetes.

Patients in jails may be housed for a short period of time before being transferred or released, and it is not unusual for patients in prison to be transferred within the system several times during their incarceration. Transferring a patient with diabetes from one correctional facility to another requires a coordinated effort as does planning for discharge.

E. Emergency and disaster preparedness

People with diabetes should always be prepared for emergencies whether natural or otherwise, affecting the nation/state or just them and their families. Such preparedness will lessen the impact an emergency may have on their condition. It is recommended that people with diabetes keep a waterproof and insulated disaster kit ready with items critically important to their self-management. These include glucose testing strips, lancets, and a glucose-testing meter; medications including insulin in a cool bag; syringes; glucose tabs or gels; antibiotic ointments/creams for external use; and glucagon emergency kits. In addition, it may be important to carry a list of contacts for national organizations, such as the ADA, through their help lines or the Internet, and photocopies of relevant medical information, particularly medication lists, and recent lab tests/procedures if available. If possible, prescription numbers should be noted, since many chain pharmacies throughout the country may be able to refill medications based on the prescription number alone. This disaster kit should be reviewed and replenished at least twice yearly.

IX. HYPOGLYCEMIA AND EMPLOYMENT/LICENSURE

Recommendations

- People with diabetes should be individually considered for employment based on the requirements of the specific job and the individual's medical condition, treatment regimen, and medical history. (E)

Any person with diabetes, whether insulin treated or non-insulin treated, should be eligible for any employment for which he/she is otherwise qualified. Despite the significant medical and technological advances made in managing diabetes, discrimination in employment and licensure against people with diabetes still occurs. This discrimination is often based on apprehension that the person with diabetes may present a safety risk to the employer or the public, a fear sometimes based on misinformation or lack of up-to-date knowledge about diabetes. Perhaps the greatest concern is that hypoglycemia will cause sudden unexpected incapacitation. However, most people with diabetes can manage their condition in such a manner that there is minimal risk of incapacitation from hypoglycemia.

Because the effects of diabetes are unique to each individual, it is inappropriate to consider all people with diabetes the same. People with diabetes should be individually considered for employment based on the requirements of the specific job. Factors to be weighed in this decision include the individual's medical condition, treatment regimen (MNT, oral glucose-lowering agent, and/or insulin), and medical history, particularly in regard to the occurrence of incapacitating hypoglycemic episodes.

X. THIRD-PARTY REIMBURSEMENT FOR DIABETES CARE, SELF-MANAGEMENT EDUCATION, AND SUPPLIES (233)

Recommendations

- Patients and practitioners should have access to all classes of antidiabetic medications,

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equipment, and supplies without undue controls.

(E)

- MNT and DSME should be covered by insurance and other payors. (E)

To achieve optimal glucose control, the person with diabetes must be able to access health care providers who have expertise in the field of diabetes. Treatments and therapies that improve glycemic control and reduce the complications of diabetes will also significantly reduce health care costs. Access to the integral components of diabetes care, such as health care visits, diabetes supplies and medications, and self-management education, is essential. All medications and supplies, such as syringes, strips, and meters, related to the daily care of diabetes must also be reimbursed by third-party payors.

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It is recognized that the use of formularies, prior authorization, and related provisions, such as competitive bidding, can manage provider practices as well as costs to the potential benefit of payors and patients. However, any controls should ensure that all classes of antidiabetic agents with unique mechanisms of action and all classes of equipment and supplies designed for use with such equipment are available to facilitate achieving glycemic goals and to reduce the risk of complications. To reach diabetes treatment goals, practitioners should have access to all classes of antidiabetic medications, equipment, and supplies without undue controls. Without appropriate safeguards, these controls could constitute an obstruction of effective care.

Medicare and many other third-party payors cover DSME (diabetes self-management training [DSMT]) and MNT. The qualified beneficiary, who meets the diagnostic criteria and medical necessity, can receive an initial benefit of 10 h of DSMT and 3 h of MNT with a potential total of 13 h of initial education as long as the services are not provided on the same date. However, not all Medicare beneficiaries with a diagnosis of diabetes will qualify for both MNT and DSMT benefits. More information on Medicare policy, including follow-up benefits, is available at www.diabetes.org/for-health-professionals-and-scientists/recognition.jsp. Or visit CMS websites: DSME, www.cms.hhs.gov/DiabetesSelfManagement; and diabetes MNT, www.cms.hhs.gov/MedicalNutritionTherapy reimbursement.

► XI. STRATEGIES FOR IMPROVING DIABETES CARE

The implementation of the standards of care for diabetes has been suboptimal in most clinical settings. A recent report (26) indicated that only 37% of adults

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with diagnosed diabetes achieved an A1C of <7%, only 36% had a blood pressure <130/80 mmHg, and just 48% had a cholesterol <200 mg/dl. Most distressing was that only 7.3% of diabetes subjects achieved all three treatment goals.

While numerous interventions to improve adherence to the recommended standards have been implemented, the challenge of providing uniformly effective diabetes care has thus far defied a simple solution. A major contributor to suboptimal care is a delivery system that too often is fragmented, lacks clinical information capabilities, often duplicates services, and is poorly designed for the delivery of chronic care. The Institute of Medicine has called for changes so that delivery systems provide care that is evidence based, patient centered, and systems oriented and takes advantage of information technologies that foster continuous quality improvement. Collaborative, multidisciplinary teams should be best suited to provide such care for people with chronic conditions like diabetes and to empower patients' performance of appropriate self-management. Alterations in reimbursement that reward the provision of quality care, as defined by the attainment of quality measures developed by such activities as the ADA/National Committee for Quality Assurance Diabetes Provider Recognition Program will also be required to achieve desired outcome goals.

The NDEP recently launched a new online resource to help health care professionals better organize their diabetes care. The www.betterdiabetescare.nih.gov website should help users design and implement more effective health care delivery systems for those with diabetes.

In recent years, numerous health care organizations, ranging from large health care systems such as the U.S. Veteran's Administration to small private practices, have implemented strategies to improve diabetes care. Successful programs have published results showing improvement in important outcomes such as A1C measurements and blood pressure and lipid determinations as well as process measures such as provision of eye exams. Successful interventions have been focused at the level of health care professionals, delivery systems, and patients. Features of successful programs reported in the literature include:

- Improving health care professional education regarding the standards of care through formal and informal education programs.
- Delivery of DSME, which has been shown to increase adherence to standard of care.
- Adoption of practice guidelines, with participation of health care professionals in the process. Guidelines should be readily accessible at the point of service, such as on patient charts, in examining rooms, in "wallet or pocket cards," on PDAs, or on office computer systems.

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Guidelines should begin with a summary of their major recommendations instructing health care professionals what to do and how to do it.

- Use of checklists that mirror guidelines have been successful at improving adherence to standards of care.
- Systems changes, such as provision of automated reminders to health care professionals and patients, reporting of process and outcome data to providers, and especially identification of patients at risk because of failure to achieve target values or a lack of reported values.
- Quality improvement programs combining continuous quality improvement or other cycles of analysis and intervention with provider performance data.
- Practice changes, such as clustering of dedicated diabetes visits into specific times within a primary care practice schedule and/or visits with multiple health care professionals on a single day and group visits.
- Tracking systems with either an electronic medical record or patient registry have been helpful at increasing adherence to standards of care by prospectively identifying those requiring assessments and/or treatment modifications. They likely could have greater efficacy if they suggested specific therapeutic interventions to be considered for a particular patient at a particular point in time (234).
- A variety of nonautomated systems, such as mailing reminders to patients, chart stickers, and flow sheets, have been useful to prompt both providers and patients.
- Availability of case or (preferably) care management services, usually by a nurse. Nurses, pharmacists, and other nonphysician health care professionals using detailed algorithms working under the supervision of physicians and/or nurse education calls have also been helpful. Similarly dietitians using MNT guidelines have been demonstrated to improve glycemic control.
- Availability and involvement of expert consultants, such as endocrinologists and diabetes educators.

Evidence suggests that these individual initiatives work best when provided as components of a multifactorial intervention. Therefore, it is difficult to assess the contribution of each component; however, it is clear that optimal diabetes management requires an organized, systematic approach and involvement of a coordinated team of health care professionals.

► Footnotes

The recommendations in this article are based on the evidence reviewed in the following publication: Standards of care for diabetes (Technical Review). *Diabetes Care* 17:1514–1522, 1994.

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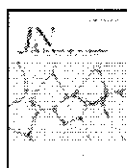
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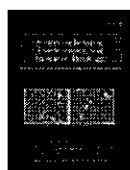
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OF MEDICAL THERAPEUTICS**
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- If new or recurrent coronary disease is identified, options of (repeat) revascularization or other treatments (e.g., CABG, transmyocardial laser revascularization, or cardiac transplantation) should be considered.

DYSLIPIDEMIA

General Principles

- Lowering cholesterol levels has been shown to decrease the risk of recurrent coronary events and procedures in patients with coronary artery disease as well as to prevent coronary artery disease in people with hypercholesterolemia.
- Several studies have shown evidence of regression of atherosclerotic lesions in patients whose lipid levels are lowered.
 - Randomized placebo-controlled event trials such as the **Scandinavian Simvastatin Survival Study** showed a decrease in total as well as cardiovascular mortality in patients with coronary artery disease who had their cholesterol levels lowered with diet and drug therapy.¹
 - In the **Cholesterol and Recurrent Events (CARE)** Study, patients with a history of myocardial infarction and baseline LDL cholesterol (LDL-C) levels of 115–175 mg/dL had a decrease in event rate when treated with cholesterol-lowering medication.²
 - The **West of Scotland Study** confirmed a decrease in risk of coronary events in men with elevated cholesterol levels and no previous history of myocardial infarction.³
 - The **Air Force/Texas Coronary Atherosclerosis Prevention Study (AFCAPS)**⁴ showed the benefits of LDL lowering for primary prevention in both men and women with HDL cholesterol (HDL-C) levels <50 mg/dL. In addition, another secondary prevention trial, the **Long-Term Intervention with Pravastatin in Ischemic Disease (LIPID)**⁵ study, showed decreased coronary events in patients with previous heart disease and a wide range of baseline cholesterol levels.
- More recently, studies such as the **Heart Protection Study**⁶ and **Pravastatin or Atorvastatin Evaluation and Infection Therapy (PROVE-IT)**⁷ study indicates that statin use at lower baseline levels of LDL or to achieve LDL levels lower than NCEP targets may be beneficial in decreasing risk in high-risk patients.

Screening and Diagnosis

- All patients with evidence of coronary disease should have lipid profiles performed. For primary prevention of cardiovascular disease, all adults over 20 should have a fasting lipoprotein profile and evaluation of cardiovascular risk factors every 5 years (Table 5-11).

TABLE 5-11

National Cholesterol Education Program Adult Treatment Panel III Guidelines: Major Risk Factors (Exclusive of Low Density Lipoprotein Cholesterol) That Modify Low Density Lipoprotein Cholesterol Goals

Cigarette smoking
 Hypertension (blood pressure $\geq 140/90$ mm Hg or on antihypertensive medication)
 Family history of premature CHD (CHD in male first-degree relative <55 years; CHD in female first-degree relative <65 years)
 Low HDL cholesterol (<40 mg/dL)^a
 Age: men ≥ 45 years
 women ≥ 55 years

CHD, coronary heart disease; HDL, high-density lipoprotein.

^aIf HDL cholesterol level is ≥ 60 mg/dL (1.55 mmol/L), subtract one risk factor.

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- The NCEP has published guidelines for the diagnosis, evaluation, and treatment of high blood cholesterol levels in adults.⁸ A recent review of clinical trials available since the Adult Treatment Panel III report was published in July 2004.⁹ The paper provides updated rationale and goals for treatment of high-risk patients.
- Lipoprotein analysis should be performed on serum obtained after a 12-hour fast. Total cholesterol, triglycerides, and HDL-C are measured, and LDL-C is calculated using the Friedewald formula:

$$\text{LDL-C} = \text{total cholesterol} - \text{HDL-C} - (\text{triglycerides}/5)$$

where triglyceride/5 represents the cholesterol contained in very-low-density lipoprotein (VLDL). This formula is not valid when triglyceride levels are >400 mg/dL. In such patients, the most reliable way to ascertain LDL-C is to measure it directly using ultracentrifugation. An immunoassay for measuring direct LDL is now widely available and can be useful in assessing LDL levels in patients with very high triglyceride levels. In patients who have had an acute MI, lipoprotein levels measured within the first 24 hours provide an approximation of their usual levels; otherwise, levels may not be stable for up to 6 weeks.

- **Risk assessment** is the first step in the evaluation of patients. Risk is determined based on the lipoprotein profile, the presence or absence of CHD, and other major risk factors (Table 5-12).
- **Initial classification** is based on LDL-C level, which is the primary target of therapy.
 - Optimal LDL-C is <100 mg/dL.
 - Near or above optimal LDL-C is 100–129 mg/dL.
 - Borderline-high LDL-C is 130–159 mg/dL.
 - High LDL-C is 160–189 mg/dL.
 - Very-high LDL-C is ≥190 mg/dL.
- **Total cholesterol and HDL-C classification**
 - Desirable total cholesterol is <200 mg/dL.
 - Borderline-high blood cholesterol is 200–239 mg/dL.
 - High blood cholesterol is ≥240 mg/dL.
 - Low HDL-C is <40 mg/dL and is counted as a risk factor.
 - High HDL-C is ≥60 mg/dL and is a negative risk factor; its presence removes one risk factor from the total count.

TABLE 5-12**National Cholesterol Education Program Adult Treatment Panel III Guidelines: Treatment Decisions Based on LDL Cholesterol^a**

Risk category	LDL goal	LDL level at which to initiate therapeutic lifestyle changes (TLCs)	LDL level at which to consider drug therapy
CHD or CHD risk equivalents (10-yr risk >20%)	<100 mg/dL	≥100 mg/dL	≥130 mg/dL (100–129 mg/dL: drug optional)
2+ Risk factors (10-yr risk ≤20%)	<130 mg/dL	≥130 mg/dL	10-yr risk 10%–20%: ≥130 mg/dL 10-yr risk <10%: ≥160 mg/dL
0–1 Risk factor	<160 mg/dL	≥160 mg/dL	≥190 mg/dL (160–189 mg/dL: LDL-lowering drug optional)

CHD, coronary heart disease; LDL, low-density lipoprotein.

^aVery-high-risk patients have an optional LDL goal of <70 mg/dL.

- Risk categories modify LDL-C goals. Patients in the category of **highest risk** are those with CAD and CAD risk equivalents. CAD risk equivalents include clinical CAD, carotid artery disease, peripheral vascular disease, and abdominal aortic aneurysm. Other CAD risk equivalents include diabetes mellitus and the presence of multiple risk factors that confer a 10-year risk for CAD >20% (Table 5-12).
 - **Very high risk** is defined as established vascular disease and additional conditions including multiple risk factors (especially diabetes), severe and poorly controlled risk factors (e.g., cigarette smoking), metabolic syndrome (high TG, low HDL-C), and acute coronary syndromes. These patients have an optimal LDL goal of <70 mg/dL. Patients with CAD and CAD risk equivalents who do not fall into the very-high-risk group have an LDL goal of <100 mg/dL.
 - The next category consists of patients with two or more risk factors (Table 5-11). Goal LDL for these patients is <130 mg/dL.
 - The third category consists of people with one or zero risk factors. The goal LDL for this group is <160 mg/dL.
- The estimation of 10-year risk of CAD is performed in patients with two or more risk factors using Framingham scoring.⁸
 - A 10-year risk of >20% is considered a CAD risk equivalent, and the goal LDL is <100 mg/dL.
 - A 10-year risk of 10%–20% qualifies the patient for a more aggressive approach than a 10-year risk of <10% even though the goal LDL is <130 mg/dL for both groups.
 - A 10-year risk of <10% usually corresponds to fewer than two risk factors.
- Classification of patients with CAD. Patients with CAD or CAD equivalents need aggressive therapy to lower LDL-C.
 - Optimal LDL-C is ≤100 mg/dL. These patients should have instruction on diet and physical activity. Other lipid and nonlipid risk factors should be treated. If patients have vascular disease and other conditions putting them into the very-high-risk category, consideration should be given to lipid-lowering therapy with a reduction in LDL-C to <70 mg/dL.
 - Higher than optimal LDL-C is above 130 mg/dL. Patients with baseline LDL above 130 mg/dL require intensive lifestyle therapy and maximal control of other risk factors. Drug therapy can be started simultaneously with lifestyle therapy. The goal of therapy is <100 mg/dL unless the patients are in the very-high-risk category. Patients with LDL-C levels between 100 and 129 mg/dL should have lifestyle therapy started or intensified and should be considered for initial or intensified drug therapy. The Heart Protection Study included patients with vascular disease and low LDL levels, with benefits from drug therapy shown even in patients whose baseline LDL-C levels were below 115 mg/dL.⁶ When LDL-lowering medication is used, a decrease of at least 30% should be obtained.
- Elevated serum triglyceride levels are an independent risk factor for atherosclerotic disease. They may be associated with increased concentrations of atherogenic particles such as chylomicron remnants, VLDL remnants, and small, dense LDL particles. Patients with hypertriglyceridemia frequently have low levels of HDL-C.
 - Normal triglycerides are <150 mg/dL.
 - Borderline-high hypertriglyceridemia levels are between 150 and 199 mg/dL. Nonpharmacologic therapy, including diet, exercise, and weight loss, is the initial form of treatment in these patients. Drug therapy is considered for those who are not at goal level of LDL, which is the first target of therapy in this group of patients.
 - High triglycerides are defined as triglyceride levels between 200 and 499 mg/dL. Nonpharmacologic treatment with diet, exercise, and weight loss is initial therapy. LDL-C remains the primary target of therapy, but non-HDL-C is a secondary target. Non-HDL-C is equal to total cholesterol minus HDL. Table 5-13 shows non-HDL cholesterol goals.
 - Very high triglycerides are >500 mg/dL. These patients are at increased risk for pancreatitis. Nonpharmacologic measures and a search for secondary causes are needed. These patients must be treated aggressively and often require drug therapy.

TABLE 5-13

National Cholesterol Treatment Program Adult Treatment Panel III Guidelines: Comparison of Low-Density Lipoprotein (LDL) Cholesterol and Non-High-Density Lipoprotein (HDL) Cholesterol Goals for Three Risk Categories

Risk category	LDL goal (mg/dL) [mmol/L]	Non-HDL goal (mg/dL) [mmol/L]
CHD and CHD risk equivalent	<100 [2.56]	<130 [3.36]
Multiple (2+ risk factors)	<130 [3.36]	<160 [4.13]
0–1 Risk factor	<160 [4.13]	<190 [4.9]

CHD, coronary heart disease.

Once triglyceride levels are lowered to <500 mg/dL, LDL is again the primary target of therapy.

Specific Disorders

- **Familial hypercholesterolemia (FH)** is an autosomal-dominant disorder involving the LDL receptor.
 - **Heterozygotes** for FH have 50% of the normal number of LDL receptors, elevated LDL-C levels, and cholesterol levels of 250–500 mg/dL. The incidence is approximately 1 in 500 persons. Affected patients often have premature vascular disease and may have tendon xanthomas.
 - Treatment usually requires drug as well as diet therapy. More severe cases may require the combination of two or more medications, typically a hydroxymethylglutaryl-coenzyme A (HMG-CoA) reductase inhibitor and a bile acid sequestrant resin or cholesterol absorption inhibitor.
 - Patients with insufficient response to tolerated doses of lipid-lowering medications may be candidates for LDL apheresis.
 - **Homozygotes** for FH have few or no LDL receptors and thus have markedly elevated LDL-C levels and blood cholesterol levels of 600–1,000 mg/dL. The incidence is 1 in 1 million. Heart disease often begins in early childhood, and many patients die of heart disease in their 20s and 30s.
 - Affected children may have planar and tuberous as well as tendon xanthomas.
 - They respond poorly to both diet and drug therapy although there may be some response to higher doses of potent statins. LDL apheresis is the preferred therapy. Liver transplantation has been performed in a few patients.
- **Familial defective apolipoprotein B-100** is an autosomal dominant disorder caused by an abnormality in the LDL receptor-binding region of apolipoprotein B-100, the major protein on the surface of LDL particles. It appears to have frequency, clinical features, and lipoprotein levels similar to those of heterozygous FH.
- **Familial combined hyperlipidemia (FCHL)** is associated with an increased risk of vascular disease. Patients may have elevated cholesterol, triglycerides, or both. The molecular basis of this disorder is unknown; many patients overproduce VLDL. FCHL appears to be an autosomal-dominant disorder and occurs in 1%–2% of the population. The diagnosis is made by the presence of multiple lipoprotein phenotypes within one family.
 - Family members may have elevated VLDL, elevated LDL-C, or increased levels of both VLDL and LDL-C. HDL is often low. Many patients will have increased levels of small, dense LDLs, particles that are atherogenic.
 - Apolipoprotein B levels are frequently elevated.
 - Diet therapy, weight loss, and exercise are useful initial therapies, but many patients will require drug therapy aimed at correcting specific lipoprotein abnormalities.
- **Severe polygenic hypercholesterolemia** is found in adults whose LDL-C is above 220 mg/dL and who do not clearly demonstrate a monogenic inheritance of hypercholesterolemia. These patients are usually at increased risk for premature CHD. Many will require medication to achieve LDL-C goals.